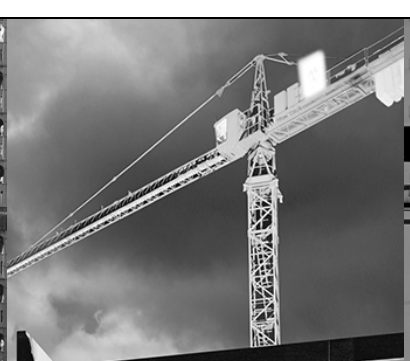
SEW EURODRIVE

Compact Operating Instructions

MOVIDRIVE® MDX60B / 61B

Edition 05/2010

16920813 / EN



KKFU 144794 3
42G1

Contents

1 General Information 4
1.1 Scope of this documentation 4
1.2 Structure of the safety notes 4
2 Safety Notes 5
2 5
2.1 General information 5
2.2 Target group 5
2.3 Designated use 6
2.4 Transportation, storage 6
2.5 Installation 7
2.6 Electrical connection 7
2.7 Safe disconnection 7
2.8 Operation 8
3 Installation 9
3.1 Wiring diagram for basic unit 9
4 Startup 14
4.1 General startup instructions 14
4.2 Operation of MOVITOOLS® MotionStudio 15
5 Operation 18
5.1 Operating displays 18
5.2 Information messages 19
5.3 Memory card 20
6 Service 22
6.1 Error information 22
6.2 Error messages and list of errors 23
6.3 SEW electronics service 39
6.4 Extended storage 39
6.5 Disposal 40
7 Declarations of Conformity 41
7.1 MOVIDRIVE® 41
7.2 MOVIDRIVE® with DFS11B/DFS21B 42
7.3 MOVIDRIVE® with DCS21B/DCS31B 43

1 General Information

1.1 Scope of this documentation

This documentation comprises the general safety notes and selected information regarding the MOVIDRIVE® MDX60B/61B inverter.

- Please note that this documentation does not replace the detailed operating instructions.
- Read the detailed operating instructions before you start working with MOVIDRIVE® MDX60B/61B.
- Observe the information, instructions and notes in the detailed operating instructions. This is essential for fault-free operation of the unit and fulfillment of any rights to claim under guarantee.
- The enclosed CD or DVD contains PDF files of the detailed operating instructions as well as other MOVIDRIVE® MDX60B/61B documentation.
- All technical documentation from SEW-EURODRIVE is available for download in PDF on the SEW-EURODRIVE website: www.sew-eurodrive.com

1.2 Structure of the safety notes

The safety notes in these operating instructions are designed as follows:

Pictogram	⚠ SIGNAL WORD
	Type and source of danger. Possible consequence(s) if disregarded. • Measure(s) to prevent the danger.

Pictogram	Signal word	Meaning	Consequences if disregarded
Example: General danger Specific danger, e.g. electric shock	⚠ **DANGER**	Imminent danger	Severe or fatal injuries
	⚠ **WARNING**	Possible dangerous situation	Severe or fatal injuries
	⚠ **CAUTION**	Possible dangerous situation	Minor injuries
	NOTICE	Possible damage to property	Damage to the drive system or its environment
	INFORMATION	Useful information or tip. Simplifies the handling of the drive system.	

2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and observed. Make sure that persons responsible for the plant and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, please contact SEW-EURODRIVE.

2.1 General information

Never install or start up damaged products. Submit a complaint to the shipping company immediately in the event of damage.

During operation, drive inverters can have live, bare and movable or rotating parts as well as hot surfaces, depending on their degree of protection.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.

Refer to the documentation for additional information.

2.2 Target group

Only qualified electricians are authorized to install, startup or service the units or correct unit faults (observing IEC 60364 or CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 as well as national accident prevention guidelines).

Qualified personnel in the context of these basic safety notes are: All persons familiar with installation, assembly, startup and operation of the product who possess the necessary qualifications.

Any activities regarding transportation, storage, operation, and disposal must be carried out by persons who have been instructed appropriately.

2.3 Designated use

Drive inverters are components intended for installation in electrical systems or machines.

In case of installation in machines, startup of the inverters (meaning the start of designated use) is prohibited until it is determined that the machine meets the requirements stipulated in the Machinery Directive 2006/42/EC; EN 60204 must be observed.

Startup (i.e. the start of designated use) is only permitted under observance of the EMC (2004/108/EC) directive.

The drive inverters meet the requirements stipulated in low voltage guideline 2006/95/EC. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these drive inverters.

You must observe the technical data and information on the connection requirements as provided on the nameplate and in the documentation.

2.3.1 Safety functions

MOVIDRIVE® MDX60/61B inverters may not perform safety functions without higher-level safety systems. Use higher-level safety systems to ensure protection of equipment and personnel.

For safety applications, refer to the information in the following publications:

- Safe disconnection for MOVIDRIVE® MDX60B/61B – Conditions
- Safe disconnection for MOVIDRIVE® MDX60B/61B – Applications

2.4 Transportation, storage

Observe the notes on transportation, storage and proper handling. Observe the climatic conditions as stated in the section "General technical data".

2.5 Installation

The units must be installed and cooled according to the regulations and specifications in the corresponding documentation.

Protect the drive inverters from excessive strain. Ensure that components are not deformed and/or insulation spaces are maintained, particularly during transportation. Avoid contact with electronic components and contacts.

Drive inverters contain components that can be damaged by electrostatic energy and improper handling. Prevent mechanical damage or destruction of electric components (may pose health risk).

The following applications are prohibited unless the unit is explicitly designed for such use:

- Use in potentially explosive atmospheres.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in non-stationary applications which are subject to mechanical vibration and impact loads in excess of the requirements in EN 61800-5-1.

2.6 Electrical connection

Observe the applicable national accident prevention guidelines when working on live drive inverters (for example, BGV A3).

Electrical installation is to be carried out in compliance with pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). For any additional information, refer to the applicable documentation.

You will find notes on EMC compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, in the documentation of the drive inverters. Always observe these notes even with drive inverters bearing the CE marking. The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204 or EN 61800-5-1).

Required preventive measure: Grounding the unit.

MOVIDRIVE® B, size 7 has an additional display LED under the lower front cover. The lit display LED indicates a DC link voltage. Do not touch power connections. Check that there is no voltage present before touching power connections even if the LED display indicates that there is no voltage.

2.7 Safe disconnection

The unit meets all requirements for safe disconnection of power and electronic connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection.

2.8 Operation

Systems with integrated drive inverters must be equipped with additional monitoring and protection devices, if necessary, according to the applicable safety guidelines, such as legislation governing technical equipment, accident prevention regulations, etc. The operating software may be used to make changes to the drive inverter.

Do not touch live components or power connections immediately after disconnecting the drive inverters from the supply voltage because there may still be some charged capacitors. Note the respective reference plates on the drive inverter.

Keep all covers and doors closed during operation.

The fact that the status LED and other display elements (such as the display LED on size 7 units) are no longer illuminated does not indicate that the unit has been disconnected from the power supply and no longer carries any voltage.

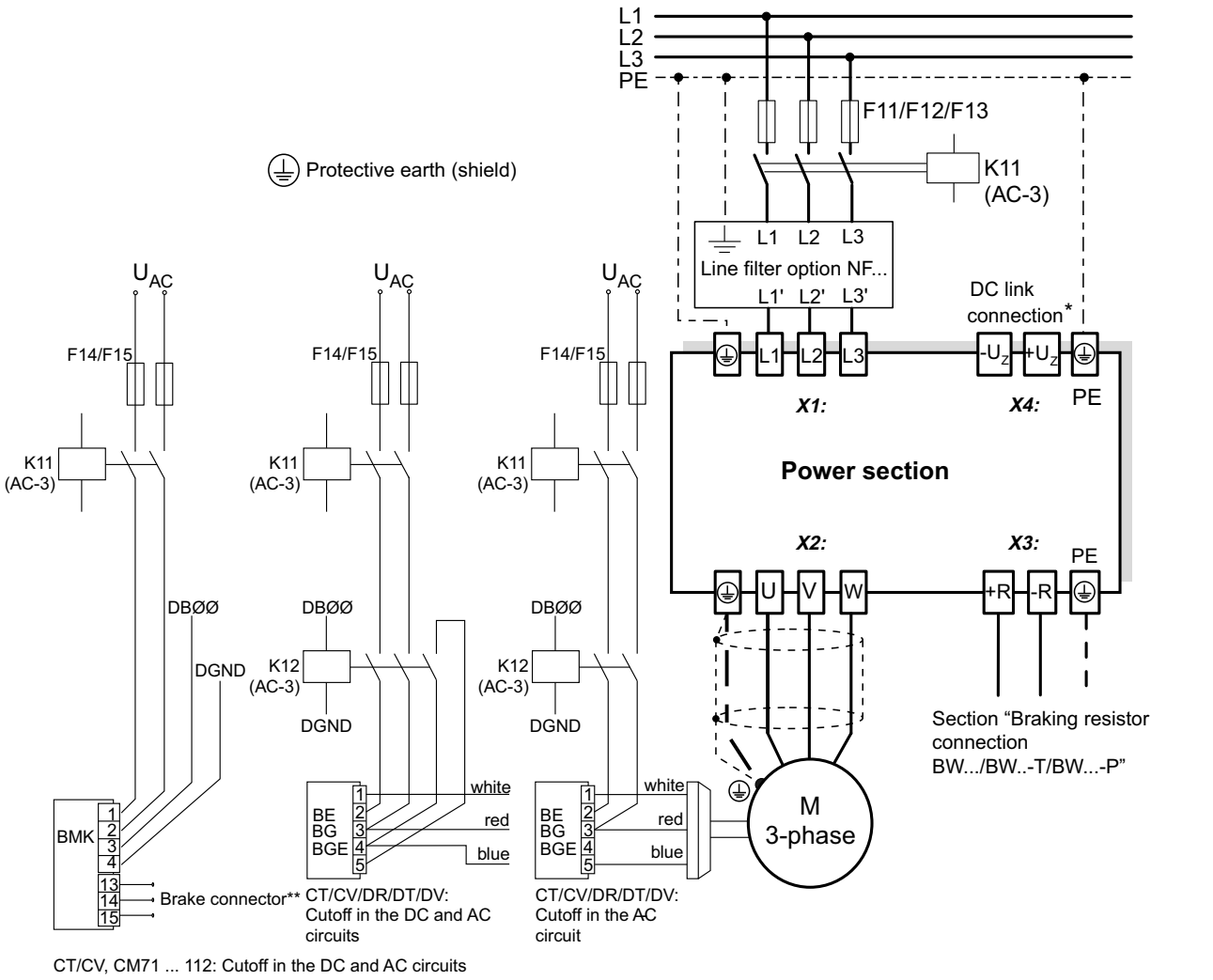
Check that there is no voltage present before touching power connections even if the LED display indicates that there is no voltage.

Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply system before correcting the error.

3 Installation

3.1 Wiring diagram for basic unit

3.1.1 Power section and brake (size 1-6)



1805559691

* With sizes 1, 2 and 2S, there is no PE connection next to the supply system connection terminals and motor connection terminals (X1, X2). In this case, use the PE terminal next to the DC link connection (X4).

** **You must adhere to the connection sequence of the brake connector.** Incorrect connection will cause irreparable damage to the brake. **Read the operating instructions for the motors** when connecting the brake using the terminal box.

	INFORMATION
	• Connect the brake rectifier using a separate supply system lead. • **Supply via the motor voltage is not permitted!**

Always switch off the brake on the DC and AC sides with:

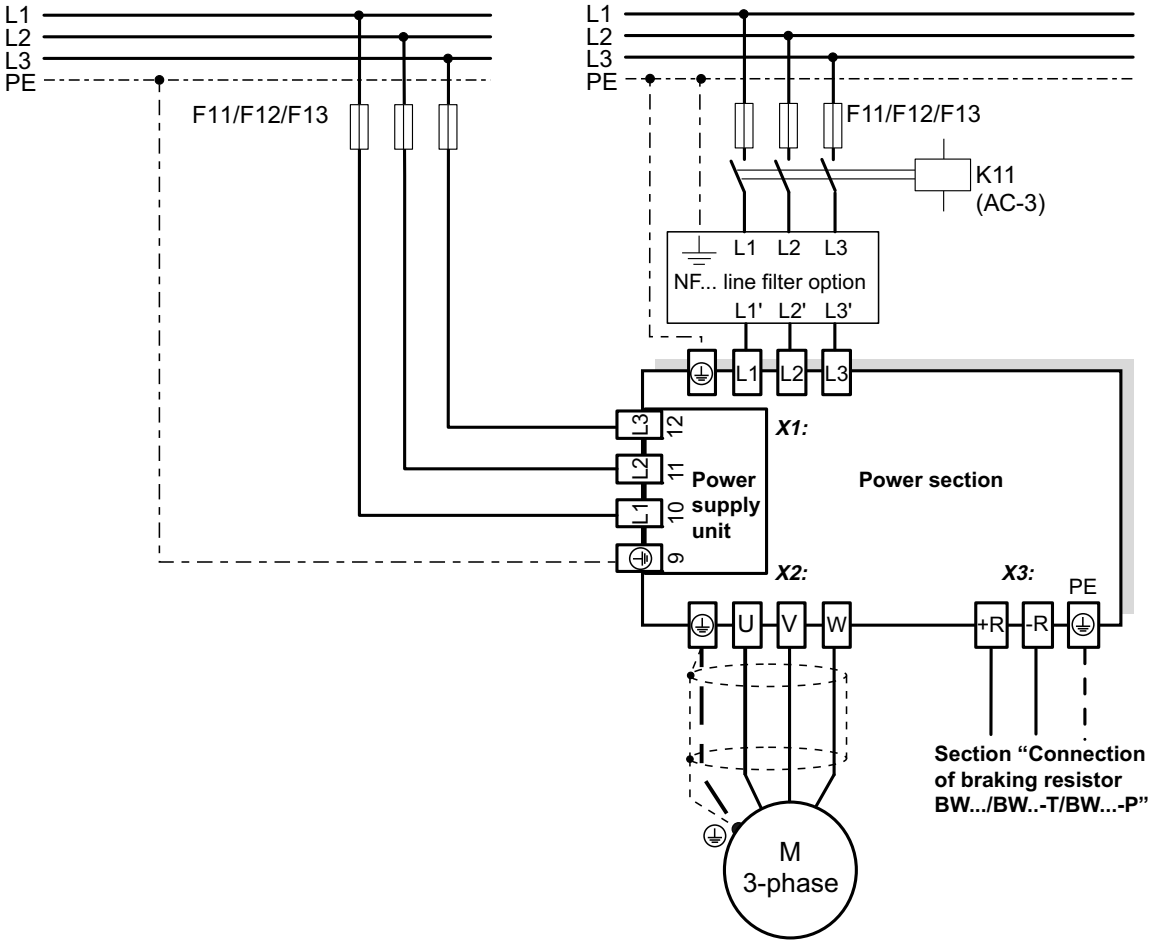
– all hoist applications,

– Drives that require a rapid brake response time

– CFC and SERVO operating modes

3.1.2 Power section and DC power supply unit (size7)

For connecting the brake, refer to the wiring diagram of size 1-6.



2079053451

Technical data of DC power supply unit:

- Rated current: AC 2.4 A
- Inrush current AC 30 A / AC 380 - 500 V

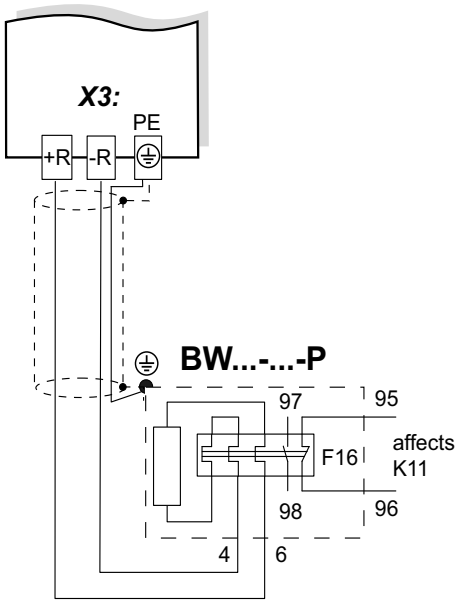
	INFORMATION
	Note that the connection of external +24 V power supply units to the X10:9 control terminal is not permitted in backup mode via power supply unit. Incorrect connection prompts an error message.

3.1.3 Brake rectifier in the control cabinet

Install the connection cables between the brake rectifier and the brake separately from other power cables when installing the brake rectifier in the control cabinet. Joint installation is only permitted with shielded power cables.

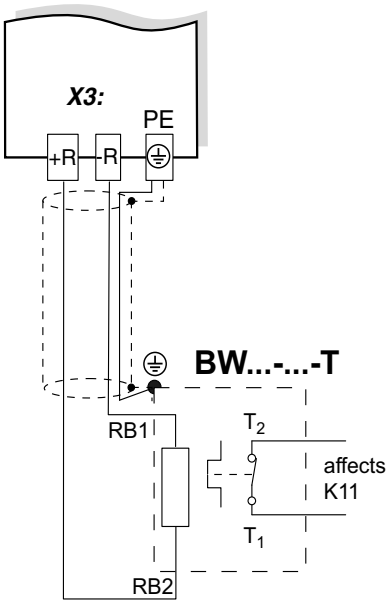
3.1.4 Braking resistor BW... / BW...-...-T /BW...-...-P

Power section



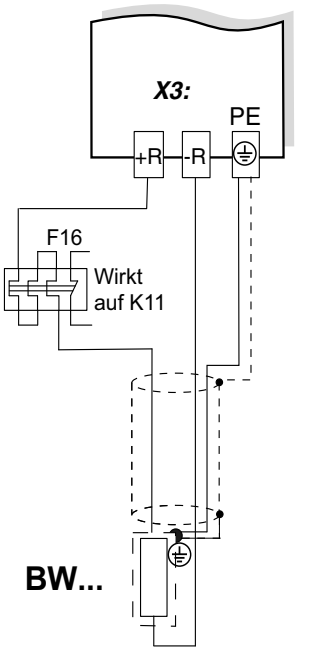
When the signal contact F16 trips, K11 must be opened and DIØØ"/Controller inhibit" must receive a "0" signal. The resistor circuit must not be interrupted!

Power section



When the internal temperature switch trips, K11 must be opened and DIØØ"/Controller inhibit" must receive a "0" signal. The resistor circuit must not be interrupted!

Power section



When the external bimetal relay (F16) trips, K11 must be opened and DIØØ "/Controller inhibit" must receive a "0" signal . The resistor circuit must not be interrupted!

1805563147

Braking resistor type	Overload protection		
	Design specified	Internal temperature switch (..T)	External bimetallic relay (F16)
BW...	-	-	Required
BW...-...-T	-	One of the two options (internal temperature switch/external bimetallic relay) is required.	
BW...-003 / BW...-005	Adequate	-	Permitted
BW090-P52B	Adequate	-	-

3.1.5 Description of terminal functions on the basic unit (power section and control unit)

Terminal		Function	
X1:1/2/3 **X2:4/5/6** **X3:8/9** **X4:**	**L1/L2/L3 (PE)** **U/V/W (PE)** **+R/-R (PE)** **+U_Z/-U_Z (PE)**	Supply system connection Motor connection Braking resistor connection DC link connection	
9,10,11,12	**L1/L2/L3/PE**	Connection of switched-mode power supply (only for size 7)	
S11: **S12:** **S13:** **S14:**		Change I-signal DC(0(4)...20 am) ↔ V-signal DC(-10 V...0...10 V, 0...10 V), factory setting to V signal. Switching system bus terminating resistor on/off; factory setting: OFF. Set baud rate for the RS485 interface XT. Either 9.6 or 57.6 baud, factory setting: 75.6 baud. Switch frequency input on or off, factory setting: switched off.	
X12:1 **X12:2** **X12:3**	**DGND** **SC11** **SC12**	Reference potential system bus System bus high System bus low	
X11:1 **X11:2/3** **X11:4** **X11:5**	**REF1** **AI11/12** **AGND** **REF2**	DC+10 V (max. DC 3 am) for setpoint potentiometer Setpoint input n1 (differential input or input with AGND reference potential), signal form → P11_/ S11 Reference potential for analog signals (REF1, REF2, AI.., AO..) DC–10 V (max. DC 3 mA) for setpoint potentiometer	
X13:1 **X13:2** **X13:3** **X13:4** **X13:5** **X13:6**	**DIØØ** **DIØ1** **DIØ2** **DIØ3** **DIØ4** **DIØ5**	Binary input 1, with fixed assignment "/Controller inhibit" Binary input 2, factory setting "CW/stop" Binary input 3, factory setting "CCW/stop" Binary input 4, factory setting "Enable/stop" Binary input 5, factory setting "n11/n21" Binary input 6, factory setting "n12/n22"	• The binary inputs are electrically isolated by optocouplers. • Selection options for binary inputs 2 to 6 (DIØ1 ... DIØ5) → Parameter menu P60_
X13:7	**DCOM**	Reference for binary inputs X13:1 to X13:6 (DIØØ to DIØ5) and X16:1/X16:2 (DIØ6 to DIØ7) • Switching binary inputs with DC+24 V external voltage: Connection X13:7 (DCOM) must be connected to the reference potential of the external voltage. – Without jumper X13:7-X13:9 (DCOM-DGND) → Isolated binary inputs – With jumper X13:7-X13:9 (DCOM-DGND) → Non-isolated binary inputs • The binary inputs must be switched with DC+24 V from X13:8 or X10:8 (VO24) → Jumper required X13:7-X13:9 (DCOM-DGND).	
X13:8 **X13:9** **X13:10** **X13:11**	**VO24** **DGND** **ST11** **ST12**	Auxiliary supply output DC+24 V (max. load X13:8 **and** X10:8 = 400 mA) for external command switches Reference potential for binary signals RS485+ (baud rate has a fixed setting of 9.6 kBaud) RS485-	
X16:1 **X16:2** **X16:3** **X16:4** **X16:5** **X16:6**	**DIØ6** **DIØ7** **DOØ3** **DOØ4** **DOØ5** **DGND**	Binary input 7, factory setting "No function" Binary input 8, factory setting "No function" Binary output 3, factory setting "IPOS output" Binary output 4, factory setting "IPOS output" Binary output 5, factory setting "IPOS output" **Do not connect external voltage to binary outputs X16:3 (DOØ3) and X16:5 (DOØ5)!** Reference potential for binary signals	• The binary inputs are electrically isolated by optocouplers. • Selection options for binary inputs 7 to 8 (DIØ6/ DIØ7) → Parameter menu P60_ • Selection options for binary outputs 3 to 5 (DOØ3...DOØ5) → Parameter menu P62_

Terminal		Function
X10:1	**TF1**	KTY+/TF-/TH connection (connect to X10:2 via TF/TH), factory set to "No response" (→ P835)
X10:2	**DGND**	Reference potential for binary signals / KTY–
X10:3	**DBØØ**	Binary output DBØØ with fixed assignment "/Brake", load capacity max DC 150 mA (short-circuit proof, protected against external voltage to DC 30 V)
X10:4	**DOØ1-C**	Shared contact binary output 1, factory setting "Ready"
X10:5	**DOØ1-NO**	Normally open contact binary output 1, max. load of relay contacts DC 30 V and DC 0.8 A
X10:6	**DOØ1-NC**	NC contact binary output 1
X10:7	**DOØ2**	Binary output DBØ2, factory set to "/Fault", max. load capacity DC 50 mA (short-circuit proof, protected against external voltage to DC 30 V). Selection options for binary outputs 1 and 2 (DOØ1 and DOØ2) → Parameter menu P62_. Do not apply external voltage to binary outputs X10:3 (DBØØ) and X10:7 (DOØ2).
X10:8	**VO24**	Auxiliary supply output DC+24 V (max. load X13:8 **and** X10:8 = 400 mA) for external command switches
X10:9	**VI24**	Input DC+24 V voltage supply (backup voltage depending on options, unit diagnosis when supply system off)
X10:10	**DGND**	Reference potential for binary signals **Note for X:10.9: Only connect external backup voltage DC +24 V to sizes 0-6. With size 7, the DC power supply unit must be connected to the supply system. Refer to section "Power section and DC power supply unit (size 7)" (page 10).**
X17:1	**DGND**	Reference potential for X17:2
X17:2	**VO24**	Auxiliary supply voltage DC+24 V, **only to supply X17:4 on the same unit**
X17:3	**SOV24**	Reference potential for DC+24 V "safe stop" input (safety contact)
X17:4	**SVI24**	DC+24 V "safe stop" input (safety contact)
XT		Only service interface. Option slot: DBG60B / UWS21B / USB11A

4 Startup

4.1 General startup instructions

⚠ DANGER

Uncovered power connections.

Severe or fatal injuries from electric shock.

- Install the touch guard according to the regulations.
- Never start the unit if the touch guard is not installed.

4.1.1 Requirements

The drive must be configured correctly to ensure that startup is successful. Refer to the MOVIDRIVE® MDX60/61B system manual for detailed project planning notes and an explanation of the parameters.

4.2 Operation of MOVITOOLS® MotionStudio

4.2.1 Via MOVITOOLS® MotionStudio

Tasks

The software package enables you to perform the following tasks with consistency:

- Establishing communication with units
- Executing functions with the units

Establishing communication with other units

The SEW Communication Server is integrated into the MOVITOOLS® MotionStudio software package for establishing communication with the units.

The SEW Communication Server allows you to create **communication channels**. Once the channels are established, the units communicate via these communication channels using their communication options. You can operate up to four communication channels at the same time.

MOVITOOLS® MotionStudio supports the following types of communication channels:

- Serial (RS-485) via interface adapters
- System bus (SBus) via interface adapters
- Ethernet
- EtherCAT
- Fieldbus (PROFIBUS DP/DP-V1)
- Tool Calling Interface

The available channels can vary depending on the units and its communication options.

Executing functions with the units

The software package offers uniformity in executing the following functions:

- Parameterization (for example in the parameter tree of the unit)
- Startup
- Visualization and diagnostics
- Programming

The following basic components are integrated into the MOVITOOLS® MotionStudio software package, allowing you to use the units to execute functions:

- MotionStudio
- MOVITOOLS®

All functions communicate using **tools**. MOVITOOLS® MotionStudio provides the right tools for every unit type.

Technical support

SEW-EURODRIVE offers you a 24-hour service hotline.

Simply dial **(+49) 0 18 05** and then enter the letters **SEWHELP** via the telephone keypad. Of course, you can also dial **(+49) 0 18 05 - 7 39 43 57**.

Online help

After installation, the following types of help are available to you:

- This documentation is displayed in a help window after you start the software.

  If the help window does not appear at the start, deactivate the "Display" control field, in the menu under [Settings] / [Options] / [Help].

  If the help window appears again, activate the "Display" control field, in the menu under [Settings] / [Options] / [Help].
- Context-sensitive help is available for the fields which require you to enter values. For example, you can use the <F1> key to display the ranges of values for the unit parameters.

4.2.2 First steps

Starting the software and creating a project

Proceed as follows to start MOVITOOLS® MotionStudio and create a project:

1. Start the MOVITOOLS® MotionStudio from the Windows start menu via:

   [Start]/[Programs]/[SEW]/[MOVITOOLS-MotionStudio]/[MOVITOOLS-MotionStudio]
2. Create a project with name and storage location.

Establishing communication and scanning the network

Proceed as follows to establish a communication with MOVITOOLS® MotionStudio and scan your network:

1. Set up a communication channel to communicate with your units.

   For detailed information on how to configure a communication channel, see the section regarding the relevant communication type.
2. Scan your network (unit scan). Press the [Start network scan] button [1] in the toolbar.

1132720523

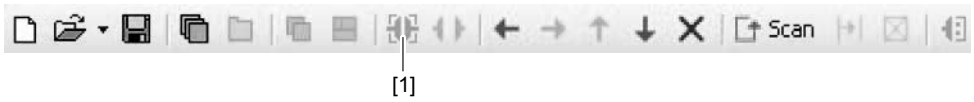
1. Select the unit you want to configure.
2. Right-click to open the context menu.

   As a result you will see a number of unit-specific tools to execute various functions with the units.

Starting up the units (online)

Proceed as follows to start up the units (online):

1. Switch to the network view.
2. Click on "Switch to online mode" [1] in the toolbar.



1184030219

[1] "Switch to online mode" symbol

3. Select the unit you want to startup.
4. Open the context menu and select the command [Startup] / [Startup].

   The Startup wizard opens.
5. Follow the instructions of the startup wizard and then load the startup data onto your unit.

5 Operation

5.1 Operating displays

5.1.1 7-segment display

The 7-segment display shows the operating condition of MOVIDRIVE® and, in the event of an error, an error or warning code.

7-segment display	Unit status (high byte in status word 1)	Meaning
0	**0**	24 V operation (inverter not ready)
1	**1**	Controller inhibit active
2	**2**	No enable
3	**3**	Standstill current
4	**4**	Enable
5	**5**	n-control (speed control)
6	**6**	M-control (torque control)
7	**7**	Hold control
8	**8**	Factory setting
9	**9**	Limit switch contacted
A	**10**	Technology option
c	**12**	IPOS$^{plus®}$ reference travel
d	**13**	Flying start
E	**14**	Calibrate encoder
F	**Error number**	Error display (flashing)
H	**Status display**	Manual operation
t	**16**	Inverter is waiting for data
U	**17**	"Safe Stop" active
² (blinking dot)	-	IPOS$^{plus®}$ program is running
Flashing display	-	STOP via DBG60B
⊐1 ...⊐9	-	RAM defective

⚠ WARNING

Incorrect interpretation of display U = "Safe stop" active.

Severe or fatal injuries.

The display U = "Safe stop" is not safety-related and must not be used as a safety function.

5.1.2 DBG60B keypad

Basic displays:

0.00rpm 0.000Amp CONTROLLER INHIBIT	Display when X13:1 (DIØØ "/CONTROL.INHIBIT") = "0".
0.00rpm 0.000Amp NO ENABLE	Display when X13:1 (DIØØ "/CONTROL.INHIBIT") = "1" and inverter is not enabled ("ENABLE/STOP" = "0").
950.00rpm 0.990Amp ENABLE (VFC)	Display for enabled inverter.
NOTE 6: VALUE TOO HIGH	Information message
(DEL)=Quit ERROR 9 STARTUP	Error display

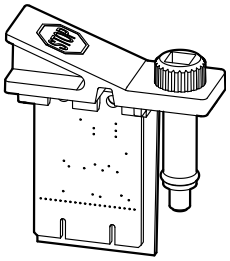
5.2 Information messages

Information messages on the DBG60B (ca. 2 s in duration) or in MOVITOOLS® MotionStudio/SHELL (message that can be acknowledged):

No.	Text DBG60B/SHELL	Description
1	ILLEGAL INDEX	Index addressed via interface not available.
2	NOT IMPLEMENT.	• Attempt to execute a non-implemented function. • An incorrect communication service has been selected. • Manual operation selected via invalid interface (e.g. fieldbus).
3	READ ONLY VALUE	Attempt to edit a read-only value.
4	PARAM. INHIBITED	Parameter lock P 803 = "ON", parameter cannot be altered.
5	SETUP ACTIVE	You tried to change parameters during setup.
6	VALUE TOO HIGH	You tried to enter a value that is too high.
7	VALUE TOO LOW	You tried to enter a value that is too low.
8	REQ. CARD MISSING	The option card required for the selected function is missing.
10	ONLY VIA ST1	Manual operation must be completed using X13:ST11/ST12 (RS 485).
11	ONLY TERMINAL	Manual operation must be exited via TERMINAL (DBG60B or UWS21B).
12	NO ACCESS	Access to selected parameter denied.
13	CTRL. INHIBIT MISSING	Set terminal DIØØ "/Controller inhibit" = "0" for the selected function.
14	INVALID VALUE	You tried to enter an invalid value.
16	PARAM. NOT LOCKED	Overflow of EEPROM buffer, e.g., due to cyclic write access. Parameter not stored in non-volatile EEPROM.
17	INVERTER ENABLED	• Parameter to be changed can only be set in the state "CONTROLLER INHIBIT". • Attempt to change to manual mode during enabled operation.

5.3 Memory card

The pluggable memory card is installed in the basic unit. The basic data is stored on the memory card and is always up-to-date. If a unit has to be replaced, the plant can be started up again quickly without PC and data backup by simply re-plugging the memory card. You can install as many option cards as required.



1810728715

Fig. 34: MDX60B/61B memory card

5.3.1 Notes for replacing the memory card

- Only plug in the memory card when the MOVIDRIVE® B unit is switched off.
- You can install the memory card from the original unit in a new inverter. The following combinations are permitted:

Original unit MOVIDRIVE® MDX60B/61B...	New inverter MOVIDRIVE® MDX60B/61B...
00	00 or 0T
0T	0T

- The same options that were available in the original unit must be installed in the new inverter.

  If this is not the case, the error message "79 HW configuration" (hardware configuration) is displayed. You can remedy the error by calling up the "DELIVERY CONDITION" menu item from the context menu (P802 factory setting). This resets the unit to its initial delivery condition. You must then restart the unit.
- The counter status of the DRS11B option and the data of the DH..1B and DCS..B options are not stored on the memory card. When you replace the memory card, you have to install the DRS11B, DH..1B and DCS..B option cards from the original unit in the new inverter.

  If the original unit was a MOVIDRIVE® B size 0 unit with the option DHP11, you have to use a new DHP11B option card with the configuration data set (file name.sewcopy) that you saved previously.
- If an absolute encoder is used as a motor or synchronous encoder, you must reference the encoder after you have replaced the unit.
- When replacing an absolute encoder, you have to reference it again.

6 Service

6.1 Error information

6.1.1 Error memory

The fault memory (P080) stores the last five error messages (errors t-0...t-4). The error message of longest standing is deleted whenever more than five error messages have occurred. The following information is stored when a malfunction occurs:

Error that has occurred · Status of binary inputs/outputs · Operating status of the inverter · Inverter status · Heat sink temperature · Speed · Output current · Active current · Unit utilization · DC link voltage · ON hours · Enable hours · Parameter set · Motor utilization.

6.1.2 Switch-off responses

There are three switch-off responses depending on the fault; the inverter remains inhibited in fault status:

Immediate disconnection The unit can no longer brake the drive; the output stage goes to high resistance in the event of a fault and the brake is applied immediately (DBØØ "/Brake" = "0").

Rapid stop The drive is braked with the stop ramp t13/t23. Once the stop speed is reached, the brake is applied (DBØØ "/Brake" = "0"). The output stage goes to high resistance after the brake reaction time has elapsed (P732 / P735).

Emergency stop The drive is braked with the emergency ramp t14/t24. Once the stop speed is reached, the brake is applied (DBØØ "/Brake" = "0"). The output stage goes to high resistance after the brake reaction time has elapsed (P732 / P735).

6.1.3 Reset

An error message can be acknowledged by:

- Switching the supply system off and on again

  Recommendation: Observe a minimum switch-off time of 10 s for the supply system contactor K11.
- Reset via input terminals; that is, via an appropriately assigned binary input (DIØ1 to DIØ7 with the basic unit, DI1Ø to DI17 with the DIO11B option).
- Manual reset in SHELL (P840 = “YES” or [Parameter] / [Manual reset]).
- Manual reset using the DBG60B.
- Auto reset performs up to five unit resets with an adjustable restart time.

⚠ DANGER

Risk of crushing if the motor starts up automatically after an auto reset.

Severe or fatal injuries.

- Do not use auto reset with drives where an automatic restart represents a danger to people or units.
- Perform a manual reset.

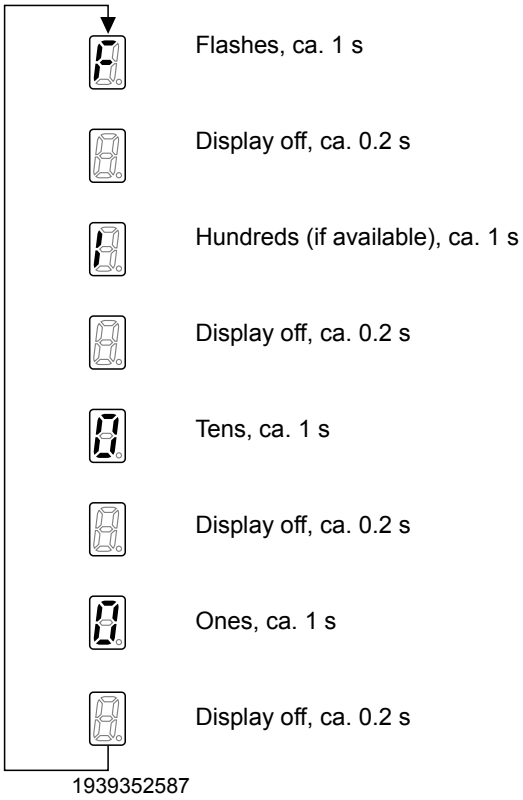
6.1.4 Inverter is waiting for data

If the inverter is controlled via a communication interface (fieldbus, RS485 or SBus) and the power was switched off and back on again or a fault reset was performed, then the enable remains ineffective until the inverter receives valid data again via the interface, which is monitored with a timeout.

6.2 Error messages and list of errors

6.2.1 Error message via 7-segment display

The fault code is shown in a 7-segment display. The following display sequence is used (e.g. fault code 100):


Flashes, ca. 1 s
Display off, ca. 0.2 s
Hundreds (if available), ca. 1 s
Display off, ca. 0.2 s
Tens, ca. 1 s
Display off, ca. 0.2 s
Ones, ca. 1 s
Display off, ca. 0.2 s
1939352587

Following a reset or if the error code resumes the value "0", the display switches to the operating display.

6.2.2 Suberror code – display

The suberror code is displayed in MOVITOOLS® MotionStudio (as of version 4.50) or in the DBG60B keypad.

6.2.3 Error list

The factory set error response is listed in the "Response P" column. (P) indicates that the response is programmable (via *P83_error response* or with IPOS$^{plus®}$). In the event of error 108, (P) indicates that the response can be programmed via *P555 DCS error response* In the event of error 109, (P) indicates that the response can be programmed via *P556 DCS alarm response*

Error			Suberror			
Code	**Designation**	**Response (P)**	**Code**	**Designation**	**Possible cause**	**Measure**
00	No error					
01	Overcurrent	Immediate disconnection	0	Output stage	• Short circuit at output • Motor too large • Defective output stage • Power supply Current converters • Ramp limit is deactivated and set ramp time is too short • Defective phase module • Supply voltage 24 V or 24V generated from it is instable • Interruption or short circuit on the signal lines from the phase modules	• Rectify the short circuit • Connect a smaller motor • Contact SEW Service for advice if the output stage is defective. • Activate P138 and/or increase ramp time
			1	V_{CE} monitoring or undervoltage monitoring of the gate driver		
			5	Inverter remains in hardware current limit		
			6	V_{CE} monitoring or undervoltage monitoring of the gate driver or overcurrent of the current converter. ..Phase U		
			7	..Phase V		
			8	..Phase W		
			9	..Phase U and V		
			10	..Phase U and W		
			11	..Phase V and W		
			12	..Phase U and V and W		
			13	Voltage supply Current converter in status mains operation		
			14	MFE signal lines		
03	Ground fault	Immediate disconnection	0	Ground fault	Ground fault • in the motor lead • in the inverter • in the motor	• Eliminate ground fault • Consult SEW Service
04	Brake chopper	Immediate disconnection	0	DC link voltage too high in 4Q operation	• Too much regenerative power • Braking resistor circuit interrupted • Short circuit in the braking resistor circuit • Brake resistance too high • Brake chopper is defective	• Extend deceleration ramps • Check supply cable to braking resistor • Check technical data of braking resistor • Replace MOVIDRIVE® if the brake chopper is defective
			1			
06	Mains phase failure	Immediate disconnection	0	DC link voltage periodically too low	• Phase failure • Inadequate line voltage quality	• Check the line cable • Check configuration of the supply system. • Check supply (fuses, contactor)
			3	Line frequency fault		
			4	-		
07	DC link overvoltage	Immediate disconnection	0	DC link voltage too high in 2Q operation	DC link voltage too high	• Extend deceleration ramps • Check supply cable to the braking resistor • Check technical data of braking resistor
			1			
			2	DC link voltage too high in 4Q operation .. .. Phase U		
			3	.. Phase V		
			4	.. Phase W		

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
08	Speed monitoring	Immediate disconnection (P)	0	Inverter in current limit or in slip limit	• Speed controller or current controller (in VFC operating mode without encoder) operating at setting limit due to mechanical overload or phase failure in the power supply or motor. • Encoder not connected correctly or incorrect direction of rotation. • n_{max} is exceeded during torque control. • In operating mode VFC: Output frequency ≥ 150 Hz • In operating mode V/f: Output frequency ≥ 600 Hz	• Reduce load • Increase deceleration time (P501 or P503). • Check encoder connection, swap A/A and B/B pairs if necessary • Check encoder voltage supply • Check current limitation • Extend ramps if necessary • Check motor cable and motor • Check mains phases
			3	"Actual speed" system limit exceeded. Speed difference between ramp setpoint and actual value for 2×ramp time higher than expected slip.		
			4	Maximum rotating field speed exceeded. Maximum rotating field frequency (with VFC max 150 Hz and V/f max 600 Hz) exceeded.		
09	Startup	Immediate disconnection	0	Startup missing	Inverter has not been started up for the selected operating mode.	Perform startup for the required operating mode.
			1	Wrong operating mode selected		
			2	Wrong encoder type or defective encoder card		
10	IPOS-ILLOP	Emergency stop	0	Invalid IPOS command	• Incorrect command detected during IPOS$^{plus®}$ program execution. • Incorrect conditions during command execution.	• Check the content of the program memory and, if necessary, correct. • Load the correct program into the program memory. • Check program sequence (→ IPOS$^{plus®}$ manual)
11	Overtemperature	Emergency stop (P)	0	Heat sink temperature too high or temperature sensor defective	• Thermal overload of inverter • Temperature sensor of a phase module faulty. (size 7)	• Reduce load and/or ensure adequate cooling. • Check fan. • If F-11 is issued even though the temperatures is obviously not too high, this indicates a faulty temperature sensor of the phase module. Replace the phase module (Size 7)
			3	Overtemperature switched-mode power supply		
			6	Heat sink temperature too high or temperature sensor defective. ..Phase U		
			7	..Phase V		
			8	..Phase W (size 7)		
13	Control signal source	Immediate disconnection	0	Control signal source not available, e.g. control signal source fieldbus without fieldbus card	Control signal source not defined or defined incorrectly.	Set correct control signal source (P101).

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
14	Encoder	Immediate disconnection	0	Encoder not connected, defective encoder, defective encoder cable	• Encoder cable or shield not connected correctly • Short circuit/broken encoder wire • Encoder defective	Check encoder cable and shield for correct connection, short circuit and broken wire.
			25	Encoder error X15 - Speed range exceeded. Encoder at X15 turns faster than 6542 rpm.		
			26	Encoder error X15 - Card is defective. Error in the quadrant evaluation.		
			27	Encoder error – encoder connection or encoder is defective		
			28	Encoder error X15 - Communication error RS485 channel.		
			29	Encoder error X14 - Communication error RS485 channel.		
			30	Unknown encoder type at X14/X15		
			31	Plausibility check error Hiperface® X14/X15 Increments have been lost.		
			32	Encoder error Hiperface® X15 Hiperface® encoder at X15 signals error		
			33	Encoder error Hiperface® X14 Hiperface® encoder at X14 signals error		
			34	Encoder error X15 resolver. Encoder connection or encoder is defective.		
17	System malfunction	Immediate disconnection	0	"Stack overflow" error	Inverter electronics disrupted, possibly due to effect of EMC.	• Check grounding and shielding and improve, if necessary. • Consult SEW Service if the error reoccurs.
18			0	"Stack underflow" error		
19			0	Fault "External NMI"		
20			0	Fault "Undefined opcode"		
21			0	"Protection fault" error		
22			0	"Illegal word operand access" error		
23			0	"Illegal instruction access" error		
24			0	"Illegal external bus access" error		
25	EEPROM	Rapid stop	0	Read or write error on EEPROM power section	Access to the EEPROM of the memory card has failed	• Activate factory settings, perform reset and reset parameters. • Contact SEW service if the error occurs again. • Replace memory card.
			11	NV memory read error NV-RAM inside the unit		
			13	NV memory chip card System module defective		
			14	NV memory chip card Memory card defective		
			16	NV memory initialization error		
26	External terminal	Emergency stop (P)	0	External terminal	Read in external error signal via programmable input.	Eliminate respective cause; reprogram terminal if necessary.

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
27	No limit switches	Emergency stop	0	Both limit switches missing or open circuit	• Open circuit/both limit switches missing. • Limit switches are swapped over in relation to direction of rotation of motor	• Check wiring of limit switches. • Swap over limit switch connections. • Reprogram terminals
			2	Limit switch reversed		
			3	Both limit switches are active simultaneously		
28	Fieldbus Timeout	Rapid stop (P)	0	Fault "Fieldbus timeout"	No communication between master and slave within the projected response monitoring.	• Check communications routine of the master • Extend fieldbus timeout time (P819) or deactivate monitoring
			2	Fieldbus card does not boot		
29	Limit switch contacted	Emergency stop	0	Hardware limit switch approached	A limit switch was reached in IPOS$^{plus®}$ operating mode.	• Check travel range. • Correct user program.
30	Emergency stop Timeout	Immediate disconnection	0	Time violation stop emergency stop rate	• Drive overloaded • Emergency stop ramp too short.	• Check configuration • Extend emergency stop ramp
31	TF/TH sensor tripped	None Response (P)	0	Thermal motor protection error	• Motor too hot, TF/TH has triggered • TF/TH of the motor not connected or connected incorrectly • MOVIDRIVE® connection and TF/TH connection on motor interrupted	• Let motor cool off and reset error • Check connections/link between MOVIDRIVE® and TF/TH. • If a TF/TH is not connected: Jumper X10:1 with X10:2. • Set P835 to "No response".
32	IPOS index overflow	Emergency stop	0	IPOS program defective	Programming principles violated leading to system internal stack overflow	Check and correct the IPOS$^{plus®}$ user program (see IPOS$^{plus®}$ manual).
33	Setpoint source	Immediate disconnection	0	Setpoint source not available, e.g. control signal source fieldbus without fieldbus card	Setpoint source not defined or defined incorrectly.	Set correct setpoint source (P100).
34	Ramp Timeout	Immediate disconnection	0	Time violation rapid stop ramp	Time of downward ramps exceeded, e.g. due to overload.	• Extend the downwards ramps • Eliminate overload
35	Operating mode	Immediate disconnection	0	Operating mode not available	• Operating mode not defined or defined incorrectly • P916 was used to set a ramp function that is needed by a MOVIDRIVE® unit in technology version. • P916 was used to set a ramp type that does not match the selected technology function. • P916 was used to set a ramp type that does not match the selected synchronization time (P888).	• Use P700 or P701 to set correct operating mode. • Use MOVIDRIVE® in technology version (..OT). • From the "Startup → Select technology function..." menu, select the technology function that matches P916. • Check the settings of P916 and P888
			1	Wrong assignment operating mode - hardware		
			2	Wrong assignment operating mode - technology function		
36	Option missing	Immediate disconnection	0	Hardware is missing or not permitted.	• Type of option card not allowed • Setpoint source, control signal source or operating mode not permitted for this option card • Incorrect encoder type set for DIP11B.	• Use correct option card • Set correct setpoint source (P100) • Set correct control signal source (P101) • Set correct operating mode (P700 or P701) • Set the correct encoder type
			2	Encoder slot error.		
			3	Fieldbus slot error.		
			4	Expansion slot error.		
37	System watchdog	Immediate disconnection	0	Error "watchdog overflow system"	Error while executing system software	Consult SEW Service.
38	System software	Immediate disconnection	0	"System software" error	System malfunction	Consult SEW Service.

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
39	Reference travel	Immediate disconnection (P)	0	"Reference travel" error	• The reference cam is missing or does not switch • Limit switches are connected incorrectly • Reference travel type was changed during reference travel	• Check reference cam • Check limit switch connection • Check reference travel type setting and required parameters.
40	Boot synchronization	Immediate disconnection	0	Timeout at boot synchronization with option.	• Error during boot synchronization between inverter and option. • Synchronization ID not/ incorrectly transmitted	Install a new option card if this error reoccurs.
41	Watchdog option	Immediate disconnection	0	Error – Watchdog timer from/to option.	• Error in communication between system software and option software • Watchdog in the IPOS$^{plus®}$ program • An application module without the application version has been loaded in a MOVIDRIVE® B unit • The wrong technology function has been set if an application module is used	• Consult SEW Service. • Check IPOS program • Check whether the unit has been activated for the application version (P079) • Check the selected technology function (P078)
			17	Watchdog IPOS error.		
42	Lag error	Immediate disconnection (P)	0	Positioning lag error	• Encoder connected incorrectly • Acceleration ramps too short • P component of positioning controller too small • Incorrectly set speed controller parameters • Value of lag error tolerance too small	• Check encoder connection • Extend ramps • Set P component to higher value • Reset speed controller parameters • Increase lag error tolerance • Check wiring of encoder, motor and mains phase. • Check whether mechanical system components can move freely or if they are blocked
43	RS485-Timeout	Rapid stop (P)	0	Communication timeout at RS485 interface.	Error during communication via interface RS485	Check RS485 connection (e.g. inverter - PC, inverter - DBG60B). If necessary, contact SEW Service.
44	Unit utilization	Immediate disconnection	0	Unit utilization error	• Unit utilization (IxT value) > 125%	• Decrease power output • Extend ramps • If suggested actions not possible, use larger inverter. • Reduce load
			8	UL monitoring error		
45	Initialization	Immediate disconnection	0	General error during initialization	• No parameters set for EEPROM in power section, or parameters set incorrectly. • Option card not in contact with backplane bus.	• Restore factory settings Consult SEW Service if the error still cannot be reset. • Insert the option card correctly.
			3	Data bus error during RAM check		
			6	CPU clock error.		
			7	Error in the current evaluation.		
			10	Error when setting flash protection		
			11	Data bus error during RAM check		
			12	Parameter setting error synchronous operation (internal synchronous operation)		

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
46	System bus 2 timeout	Rapid stop (P)	0	Timeout system bus CAN2	Error during communication via system bus 2.	Check system bus connection.
47	System bus 1 timeout	Rapid stop (P)	0	Timeout system bus CAN1	Error during communication via system bus 1.	Check system bus connection.
48	Hardware DRS	Immediate disconnection	0	Hardware synchronous operation	**Only with DRS11B:** • Encoder signal from master/ synchronous encoder faulty. • Hardware required for synchronous operation is faulty.	• Check encoder signals of master/synchronous encoder. • Check encoder wiring. • Replace synchronous operation card.
77	IPOS control word	None Response (P)	0	Invalid control word IPOS	**Only in IPOS$^{plus®}$ operating mode:** • An attempt was made to set an invalid automatic mode (via external controller). • P916 = BUS RAMP is set.	• Check serial connection to external control. • Check write values of external control. • Set correct value for P016.
78	IPOS SW limit switch	No response (P)	0	Software limit switch reached	**Only in IPOS$^{plus®}$ operating mode:** Programmed target position is outside travel range delimited by software limit switches.	• Check the user program • Check position of the software limit switches
79	Hardware configuration	Immediate disconnection	0	Deviating hardware configuration when replacing the memory card	The following items do not match anymore after having replaced the memory card: • Power • Rated voltage • Variant identification • Unit series • Application or standard version • Option cards	Ensure identical hardware or restore factory setting (parameter = factory setting).
80	RAM test	Immediate disconnection	0	"RAM test" error	Internal unit fault, RAM defective.	Consult SEW Service.
81	Start condition	Immediate disconnection	0	Start condition error with VFC hoist	**Only in "VFC hoist" operating mode:** The motor could not be supplied with the correct amount of current during the pre-magnetizing time: • Rated motor power too small in relation to rated inverter power. • Motor cable cross section too small. **Only for operation with a linear motor (as of firmware 18):** • The drive has been set to "Enable" although the commutation offset between linear motor and linear encoder is not known. This means that the inverter cannot set the current indicator correctly.	• Check startup data and perform new startup, if necessary. • Check connection between inverter and motor. • Check cross section of motor cable and increase if necessary. • Perform commutation travel in the "No enable" state and then switch to "Enable" once the inverter has acknowledged in status word bit 25 that commutation was successful.
82	Open output	Immediate disconnection	0	Output open with VFC hoist	**Only in "VFC hoist" operating mode:** • Two or all output phases interrupted. • Rated motor power too small in relation to rated inverter power.	• Check connection between inverter and motor. • Check startup data and perform new startup, if necessary.

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
84	Motor protection	Emergency stop (P)	0	"Motor temperature simulation" error	• Motor utilization too high. • I_N-U_L monitoring 1 triggered • P530 set later to "KTY"	• Reduce load. • Extend ramps. • Observe longer pause times. • Check P345/346 • Select a larger motor
			2	Short circuit or open circuit in the temperature sensor		
			3	No thermal motor model available		
			4	UL monitoring error		
86	Memory module	Immediate disconnection	0	Error in connection with memory module	• No memory card • Memory card defective	• Tighten knurled screw • Insert and secure memory card • Replace memory card
			2	Hardware card detection wrong memory card		
87	Technology function	Immediate disconnection	0	Technology function selected with standard unit	A technology function was activated in a standard version.	Disable technology function
88	Flying start	Immediate disconnection	0	"Flying start" error	**Only in VFC n-CTRL operating mode:** Actual speed > 6000 rpm with the inverter enabled.	Inverter not enabled before actual speed is ≤ 6000 rpm.
92	DIP encoder problem	Error display (P)	1	Stahl WCS3 dirt problem	Encoder signals an error	Possible cause: Encoder is dirty → clean encoder
93	DIP encoder error	Emergency stop (P)	0	Fault "Absolute encoder"	The encoder signals an error, e.g. power failure. • Connection cable between the encoder and DIP11B does not meet the requirements (twisted pair, shielded). • Cycle frequency for cable length too high. • Permitted max. speed/ acceleration of encoder exceeded. • Encoder defective.	• Check absolute encoder connection. • Check connection cables. • Set correct cycle frequency. • Reduce maximum traveling velocity or ramp. • Replace the absolute encoder.
94	EEPROM checksum	Immediate shut-off	0	Power section parameters	Inverter electronics disrupted, possibly due to effect of EMC or a defect.	Send unit in for repair.
			5	Control unit data		
			6	Power section data		
			7	Invalid version of the configuration data set		
95	DIP plausibility error	Emergency stop (P)	0	Validity check of absolute position	No plausible position could be determined. • Incorrect encoder type set. • IPOS$^{plus®}$ travel parameter set incorrectly. • Numerator/denominator factor set incorrectly. • Zero adjustment performed. • Encoder defective.	• Set the correct encoder type. • Check IPOS$^{plus®}$ travel parameters. • Check traveling velocity. • Correct numerator/ denominator factor. • After zero adjustment reset. • Replace the absolute encoder.
97	Copy error	Immediate disconnection	0	Parameter set upload is/ was faulty	• Memory card cannot be written or read. • Error during data transmission	• Repeat copying process • Restore default setting (P802) and repeat copying process
			1	Download of parameter set to unit cancelled.		
			2	Not possible to adopt parameters. Not possible to adopt parameters from memory card.		
98	CRC error	Immediate disconnection	0	"CRC via internal flash" error	Internal unit error Flash memory defective	Send unit in for repair.

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
99	IPOS ramp calculation	Immediate disconnection	0	"Ramp calculation" error	**Only in IPOS$^{plus®}$ operating mode:** Positioning ramp is sinusoidal or square and an attempt is made to change ramp times and traveling velocities with enabled inverter.	Rewrite the IPOS$^{plus®}$ program so that ramp times and traveling velocities can only be altered when the inverter is inhibited.
100	Vibration warning	Display error (P)	0	Vibrations diagnostics warning	Vibration sensor warning (→ "DUV10A" operating instructions).	Determine cause of vibrations. Continue operation until F101 occurs.
101	Vibration error	Rapid stop (P)	0	Vibration diagnostics error	Vibration sensor reports error.	SEW-EURODRIVE recommends that you remedy the cause of the vibrations immediately
102	Oil aging warning	Display error (P)	0	Oil aging warning	Error message from the oil aging sensor	Schedule oil change.
103	Oil aging error	Display error (P)	0	Oil aging error	Error message from the oil aging sensor	SEW-EURODRIVE recommends that you change the gear unit oil immediately.
104	Oil aging overtemperature	Display error (P)	0	Oil aging overtemperature	Overtemperature signal from the oil aging sensor	• Let oil cool down • Check if the gear unit cools properly
105	Oil aging ready signal	Display error (P)	0	Oil aging ready signal	Oil aging sensor is not ready for operation	• Check voltage supply of oil aging sensor • Check and, if necessary, replace the oil aging sensor
106	Brake wear	Display error (P)	0	Brake wear error	Brake lining worn	Replace brake lining (→ "Motors" operating instructions).
107	Line components	Immediate disconnection	1	No feedback signal from main contactor.	Defective main contactor	• Check main contactor • Check control cables.

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS error	Immediate stop/malfunction (P)	0	DCS error		
			1	Error during transfer of configuration data to the monitoring unit.	Interruption in connection during program download	Send the configuration files again
			2	Configuration data for software version of the subassembly is invalid.	Subassembly configured with incorrect software version of the programming interface.	Configure subassembly with permitted version of the programming interface. Then switch subassembly off and on again.
			3	Unit was programmed with incorrect programming interface.	Program or configuration data was loaded into the unit with an incorrect programming interface.	Check the design of the subassembly. Configure again with a valid programming interface. Then switch the unit off and on again.
			4	Faulty reference voltage.	• Supply voltage of the subassembly is defective. • Faulty component in the subassembly	• Check supply voltage • Switch unit off and on again
			5			
			6	Faulty system voltage.		
			7			
			8	Faulty test voltage		
			9			
			10	Faulty DC 24 V voltage supply		
			11	Ambient temperature of the unit is not in the defined range.	Temperature at the place of operation is not in the permitted range.	Check the ambient temperature.
			12	Plausibility error for position changeover	For the position changeover, ZSC, JSS or DMC is permanently activated.	• Check ZSC activation • Check JSS activation • Check DMC activation (only for monitoring via position)
			13	Faulty switching of the LOSIDE driver DO02_P / DO02_M	Short circuit of the output.	Check wiring at the output.
			14	Faulty switching of the HISIDE driver DO02_P / DO02_M		
			15	Faulty switching of the LOSIDE driver DO0_M		
			16	Faulty switching of the HISIDE driver DO0_P		
			17	Faulty switching of the LOSIDE driver DO01_M		
			18	Faulty switching of the HISIDE driver DO01_P		

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Rapid stop/ warning (P)	0	DCS alarm		
			1	Communication error at the CAN interface of the inverter	The DCS21B/31B option does not receive any valid data from the inverter.	• Check hardware connection to the inverter • Check version of the inverter
			2 3	Plausibility error digital input at pulse P1	No pulse1 voltage present at binary input DI1	• Check configuration of the DI1 digital input according to configuration and wiring diagram • Check wiring
			4 5	Plausibility error digital input at pulse P2		• Check configuration of the DI2 binary input according to configuration and wiring diagram • Check wiring
			6 7	Pulse 1 plausibility error at binary input DI3		• Check configuration of the DI3 binary input according to configuration and wiring diagram • Check wiring
			8 9	Pulse 1 plausibility error at binary input DI4		• Check configuration of the DI4 binary input according to configuration and wiring diagram • Check wiring
			10 11	Pulse 1 plausibility error at binary input DI5		• Check configuration of the DI5 binary input according to configuration and wiring diagram • Check wiring
			12 13	Pulse 1 plausibility error at binary input DI6		• Check configuration of the DI6 binary input according to configuration and wiring diagram • Check wiring
			14 15	Pulse 1 plausibility error at binary input DI7		• Check configuration of the DI7 binary input according to configuration and wiring diagram • Check wiring
			16 17	Pulse 1 plausibility error at binary input DI8		• Check configuration of the DI8 binary input according to configuration and wiring diagram • Check wiring

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Rapid stop/ warning (P)	18 19	Pulse 2 plausibility error at binary input DI1	No pulse 2 voltage present at binary input DI1.	• Check configuration of the DI1 digital input according to configuration and wiring diagram • Check wiring
			20 21	Pulse 2 plausibility error at binary input DI2		• Check configuration of the DI2 binary input according to configuration and wiring diagram • Check wiring
			22 23	Pulse 2 plausibility error at binary input DI3		• Check configuration of the DI3 binary input according to configuration and wiring diagram • Check wiring
			24 25	Pulse 2 plausibility error at binary input DI4		• Check configuration of the DI4 binary input according to configuration and wiring diagram • Check wiring
			26 27	Pulse 2 plausibility error at binary input DI5		• Check configuration of the DI5 binary input according to configuration and wiring diagram • Check wiring
			28 29	Pulse 2 plausibility error at binary input DI6		• Check configuration of the DI6 binary input according to configuration and wiring diagram • Check wiring
			30 31	Pulse 2 plausibility error at binary input DI7		• Check configuration of the DI7 binary input according to configuration and wiring diagram • Check wiring
			32 33	Pulse 2 plausibility error at binary input DI8		• Check configuration of the DI8 binary input according to configuration and wiring diagram • Check wiring
			34 35	Plausibility error in the speed recording	The difference between the two speed sensors is higher than the configured speed cut-off threshold.	• Check track again with the data of the encoder configuration. • Check the velocity sensor • Use the SCOPE function to set speed signals so that they are congruent
			36 37	Plausibility error in the position acquisition	The difference between the two position sensors is higher than the configured value.	• Check track with the configured data of the encoder setting • Check position signal • Are all signals connected correctly to the 9-pin encoder connector? • Check the encoder connector for correct wiring. Is the jumper between pin 1 and pin 2 on the 9-pin encoder connector closed (SSI absolute encoder)? • Use the SCOPE function to set positions signals so that they are congruent

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Rapid stop/ warning (P)	38 39	Plausibility error incorrect position range	The current position is outside the configured range.	• Check track with the configured data of the encoder setting • Check position signal, correct offset if necessary • Use the SCOPE function to read off the position and set in ratio to the configured values
			40 41	Plausibility error incorrect speed.	The current speed exceeds the configured maximum speed.	• The drive moves outside the permitted and configured speed range • Check configuration (set max. velocity) • Analyze the speed development using the SCOPE function
			42 43	Configuration error: Acceleration	The current acceleration is outside the configured acceleration range.	• Check encoder type and configuration (SSI/ incremental) • Check the encoder connection/wiring • Check polarity of the encoder data • Check function of the encoder
			44 45	Plausibility error in encoder interface (A3401 = encoder 1 and A3402 = encoder 2).	The wiring of the encoder does not correspond to the configured data.	• Check encoder type and configuration (SSI/ incremental) • Check the encoder connection/wiring • Check polarity of the encoder data • Check function of the encoder
			46 47	Encoder supply voltage error (A3403 = encoder 1 and A3404 = encoder 2)	Encoder voltage supply is outside the defined range (min. DC 20 V / max. DC 29 V).	• Overload in the supply voltage of the encoder; internal fuse has triggered • Check supply voltage of the DCS21B/31B option
			48 49	Reference voltage error	The reference voltage input of the encoder system is outside the defined range.	Check reference voltage input of the encoder system.
			50 51	Difference level RS485 driver 1 (error INC_B or SSI_CLK) faulty	No encoder connection, incorrect encoder type.	Check the encoder connection.
			52 53	Difference level RS485 driver 2 (error INC_A or SSI_DATA) faulty.		
			54 55	Incremental counter deviation		
			56 57	Plausibility error in encoder interface (A3401 = encoder 1 and A3402 = encoder 2)	The wiring of the encoder does not correspond to the configured data.	• Check encoder type and configuration (SSI/ incremental) • Check the encoder connection/wiring • Check polarity of the encoder data • Check function of the encoder

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Rapid stop/ warning (P)	58	Plausibility error SIN/COS encoder connection.	Incorrect encoder type connected.	• Check encoder connection • Check the encoder connection (jumper between pin 1 and pin2)
			59			
			60	Plausibility error incremental encoder connection		
			61			
			62		Phase error of the incremental or sin/cos encoder.	• Check encoder connection • Replace the defective encoder
			63			
			64	Plausibility error - SSI encoder connection.	Connected encoder type does not correspond to the configuration.	• Check encoder connection • Check connected encoder
			65			
			66	Plausibility error - SSI listener encoder connection		
			67			
			68	Faulty switching of the LOSIDE driver DO2_M	DC 0 V short circuit at the output.	Check wiring at the output.
			69	Faulty switching of the HISIDE driver DO2_P		
			70	Faulty switching of the LOSIDE driver DO0_M		
			71	Faulty switching of the HISIDE driver DO0_P		
			72	Faulty switching of the LOSIDE driver DO1_M		
			73	Faulty switching of the HISIDE driver DO1_P		
			74	Undervoltage test watchdog for LOSIDE driver	DC 0 V short circuit at on of the DC 0 V outputs.	Check wiring at the outputs.
			75	Undervoltage test watchdog for HISIDE driver	DC 24 V short circuit at on of the DC 24 V outputs.	
			76	CCW and CW monitoring (in DMC module) activated simultaneously	Multiple activation.	Only one direction of rotation can be activated in the DMC module.
			77			
			78	CCW and CW monitoring range of the OLC activated simultaneously		
			79			
			80	CCW and CW monitoring (in JSS module) was activated simultaneously		
			81			
			82	Timeout error MET.	Input element with time monitoring is faulty.	• Check wiring of input element • Input element faulty
			83	Time monitoring start signal for confirmation button.		
			84	Timeout error MEZ.	Two-hand operation with time monitoring is faulty.	
			85	Time monitoring for two-hand button.		
			86	EMU1 monitoring error	Faulty monitoring of the external disconnection channel	• Check hardware connections • Pick-up or release time too short • Check switching contacts
			87			
			88	EMU2 monitoring error		
			89			
110	"Ex-e protection" error	Emergency stop	0	Duration of operation below 5 Hz exceeded	Duration of operation below 5 Hz exceeded	• Check configuration • Shorten duration of operation below 5 Hz
113	Analog input open circuit	No response (P)	0	AI1 analog input open circuit	AI1 analog input open circuit	Check wiring
116	"Timeout MOVI-PLC" error	Rapid stop/ warning	0	MOVI-PLC® communication timeout		• Check startup • Check wiring
123	Positioning interruption	Emergency stop (P)	0	Error "Positioning/Positioning interruption"	Target monitoring when interrupted positioning process is resumed. Target would be overrun.	Perform positioning process without interruption until it is complete.

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
124	Ambient conditions	Emergency stop (P)	1	Permitted ambient temperature exceeded	Ambient temperature > 60°C	• Improve ventilation and cooling conditions • Improve air supply to the control cabinet; check filter mats.
196	Power section	Immediate disconnection	1	Discharge resistor	Discharge resistor overload	Observe waiting time for power on/off
			2	Hardware ID precharge/ discharge control	Incorrect precharge/discharge control variant	• Consult SEW Service • Replace precharge/discharge control
			3	Inverter coupling PLD Live	Defective inverter coupling	• Consult SEW Service • Replace inverter coupling
			4	Inverter coupling reference voltage	Defective inverter coupling	• Consult SEW Service • Replace inverter coupling
			5	Power section configuration	Different phase modules installed in the unit	• Inform SEW service. • Check and replace phase modules
			6	Control unit configuration	Control unit line inverter or motor inverter incorrect	Replace or correctly assign the control unit of line and motor inverter.
			7	Communication power section control unit	No communication	Check control unit installation.
			8	Communication precharge/discharge control inverter coupling	No communication	• Check wiring • Consult SEW Service
			10	Communication power section control unit	The inverter coupling does not support protocol	Replace inverter coupling
			11	Communication power section control unit	Faulty communication with inverter coupling at power-up (CRC error).	Replace inverter coupling
			12	Communication power section control unit	Inverter coupling uses protocol that does not match control unit	Replace inverter coupling
			13	Communication power section control unit	Faulty communication with inverter coupling during operation: More than once per second a CRC error.	Replace inverter coupling
			14	Control unit configuration	Missing PLD functionality for EEPROM data set size 7.	Replace control unit
			15	Inverter coupling error	Inverter coupling processor has signaled internal error.	• Consult SEW service if the error reoccurs • Replace inverter coupling
			16	Inverter coupling error: PLD version incompatible		Replace inverter coupling
			17	Precharge/discharge control error	Precharge/discharge control processor has signaled internal error	• Consult SEW service if the error reoccurs • Replace precharge/discharge control
			18	Defective DC link fan	The DC link fan is faulty.	• Consult SEW Service • Check whether DC link choke fan is connected or faulty
			19	Communication power section control unit	Faulty communication with inverter coupling during operation: More than once per second an internal error.	• Consult SEW Service if the error reoccurs. • Replace inverter coupling
			20	Communication power section control unit	The control unit has not sent any messages to the inverter coupling for a while.	• Consult SEW Service if the error reoccurs. • Replace inverter coupling
			21	Uz measurement implausible phase R	Defective phase module	Consult SEW service if the error reoccurs
			22	Uz measurement implausible phase S		
			23	Uz measurement implausible phase T		

Error			Suberror			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
197	Power supply	Immediate disconnection	1	Line overvoltage (motor inverter only at start of precharging process)	Inadequate line voltage quality.	• Check supply (fuses, contactor) • Check configuration of the supply system
			2	Line undervoltage (only with line inverter)		
199	DC link charging	Immediate disconnection	4	Precharging was aborted	Unable to charge DC link.	• Precontrol overload • Connected DC link capacity too high • Short circuit in the DC link; check DC link connection in case of several units.

6.3 SEW electronics service

6.3.1 Send in for repair

Please contact the **SEW-EURODRIVE electronics service if an error cannot be rectified** (→ "Customer and spare parts service").

When contacting SEW electronics service, always quote the digits on the status label so that our service personnel can assist you more effectively.

Provide the following information when sending the unit in for repair:

- Serial number (→ nameplate)
- Unit designation
- Standard version or application version
- Digits on the status label
- Short description of application (drive application, control via terminals or serial)
- Connected motor (motor type, motor voltage, connection ⅄ or △)
- Nature of the fault
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.

6.4 Extended storage

If the unit is stored for a long time, connect it to the mains voltage for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.

Procedure when maintenance has been neglected:

Electrolytic capacitors are used in the inverters. They are subject to aging effects when deenergized. This effect can damage the capacitors if the unit is connected using the rated voltage after a longer period of storage.

If you have not performed maintenance regularly, SEW-EURODRIVE recommends that you increase the line voltage slowly up to the maximum voltage. This can be done, for example, by using a variable transformer for which the output voltage has been set according to the following overview.

The following stages are recommended:

AC 400/500 V units:

- Stage 1: AC 0 V to AC 350 V within a few seconds
- Stage 2: AC 350 V for 15 minutes
- Stage 3: AC 420 V for 15 minutes
- Stage 4: AC 500 V for 1 hour

AC 230 V units:

- Stage 1: AC 170 V for 15 minutes
- Stage 2: AC 200 V for 15 minutes
- Stage 3: AC 240 V for 1 hour

After you have completed the regeneration process, the unit can be used immediately or stored again for an extended period with maintenance.

6.5 Disposal

Please follow the current instructions. Dispose in accordance with the material structure and the regulations in force for instance as:

- Electronics scrap (circuit boards)
- Plastic (housing)
- Sheet metal
- copper

7 Declarations of Conformity

7.1 MOVIDRIVE®

EC Declaration of Conformity

SEW EURODRIVE

900230010

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the

frequency inverters of the series	**MOVIDRIVE® B**	
are in conformity with		
Machinery Directive	**2006/42/EC**	**1)**
Low Voltage Directive	**2006/95/EC**	
EMC Directive	**2004/108/EC**	**4)**
applied harmonized standards	**EN 13849-1:2008** **EN 61800-5-1:2007** **EN 61800-3:2007**	**5)**

1) These products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.

4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.

5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

Bruchsal	11.12.09	Johann Soder	
Place	Date	Managing Director Technology	a) b)

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

7.2 MOVIDRIVE® with DFS11B/DFS21B

EC Declaration of Conformity

SEW EURODRIVE

900010010

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the

frequency inverters of the series	**MOVIDRIVE® B**	
with built-in	**DFS11B** **DFS21B**	**PROFIsafe®** **PROFIsafe®**
are in conformity with		
Machinery Directive	**2006/42/EC**	**1)**
Low Voltage Directive	**2006/95/EC**	
EMC Directive	**2004/108/EC**	**4)**
applied harmonized standards	**EN 13849-1:2008** **EN 62061: 2006** **EN 61800-5-1:2007** **EN 61800-3:2007**	**5)**

1) These products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.

4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.

5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

Bruchsal	11.12.09	Johann Soder	
Place	Date	Managing Director Technology	a) b)

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

7.3 MOVIDRIVE® with DCS21B/DCS31B

EC Declaration of Conformity

SEW EURODRIVE

900020010

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the

frequency inverters of the series	**MOVIDRIVE® B**	
with built-in	**DCS21B** **DCS31B**	**PROFIsafe®**
are in conformity with		
Machinery Directive	**2006/42/EC**	**1)**
Low Voltage Directive	**2006/95/EC**	
EMC Directive	**2004/108/EC**	**4)**
applied harmonized standards	**EN 13849-1:2008** **EN 61800-5-1:2007** **EN 61800-3:2007**	**5)**

1) These products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.

4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.

5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

Bruchsal	11.12.09	Johann Soder	
Place	Date	Managing Director Technology	a) b)

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023
D-76642 Bruchsal/Germany
Phone +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com

➞ **www.sew-eurodrive.com**